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II

E7-10173
CR-153211

APPLICATION OF LANDSAT-2 TO THE MANAGEMENT OF DELAWARE'S MARINE AND WETLAND RESOURCES

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(E77-10173) APPLICATION OF LANDSAT-2 TO THE MANAGEMENT OF DELAWARE'S MARINE AND WETLAND RESOURCES Progress Report, Apr. - Jun. 1977 (Delaware Univ.) 5 p HC A02/MF A01 CSCL 08C

N77-26575

Unclas
G2/43 00173

June 15, 1977
Type II Progress Report
for period April 1977-June 1977
CONTRACT NAS5-20983

20570

Prepared for
GODDARD SPACE FLIGHT CENTER
GREENBELT, MARYLAND 20771

RECEIVED
JUN 18 1977
SIS/902.6

A. PROBLEMS

In response to our request, NASA has agreed to a no-cost extension of this contract, increasing the length of the investigation from 26 to 29 months, and the period of performance from 30 to 33 months. (Modification No. 6 to Contract NAS5-20983)

B. ACCOMPLISHMENTS

Status of each objective is shown in terms of percentage of tasks completed.

Study Objectives	Status
1. Monitoring the dispersion and movement of ocean dump plumes. (Work Statement Tasks 1, 2, 3, and 4.)	85%
2. Suspended sediment concentration mapping. (Work Statement Tasks 5, 6, and 7.)	90%
3. Current circulation and density front charting for a model which predicts the drift and dispersion of oil slicks. (Work Statement Tasks 8, 9, 10, and 11.)	100%
4. Coastal land use and vegetation studies. (Work Statement Tasks 12, 13, and 14.)	100%
5. Comparison of training site and spectral signature (with atmospheric correction) techniques for classifying coastal land cover and environmental impact. (Work Statement Task 15.)	80%
6. Impact of Outer Continental Shelf development on the coastal zone of Delaware. (Work Statement Tasks 16, 17, and 18.)	70%

Most of the results attained were presented in progress reports, recent publications (Ref. 2 through 10), and LANDSAT follow-on evaluation reviews at NASA Goddard Space Flight Center, NASA Langley Research Center, and NASA Headquarters (Ref. 11, 12, and 13).

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C. SIGNIFICANT RESULTS

Three new journal articles were published as shown under "Publications" (15, 16, and 17).

D. PUBLICATIONS

1. Klemas, V., Invited presentation to Captain Jacques Cousteau and Dr. Philippe Cousteau on Ocean Current Measurement with Integrated Drogue-Aircraft-Satellite Systems, NASA Headquarters, Washington, D. C., October 6, 1975.

2. Klemas, V., Bartlett, D., Rogers, R., Coastal Zone Classification from Satellite Imagery. Photogrammetric Engineering and Remote Sensing, Journal of the American Society of Photogrammetry, Vol. 41, No. 3, April, 1975.

3. Klemas, V., Otley, M., Wethe, C., Rogers, R., ERTS-1 Studies of Coastal Water Turbidity and Current Circulation, American Geophysical Union 55th Annual Meeting, Washington, D. C., April 8-12, 1974.

4. Klemas, V., Tornatore, G., Whelan, W., A New Current Drogue for Monitoring Shelf Circulation, American Geophysical Union 56th Annual Meeting, Washington, D. C., June 16-20, 1975.

5. Klemas, V. and Bartlett, D., Application of ERTS-1 and Skylab to Coastal Zone Management, NASA Earth Resources Survey Symposium, Houston, June 8-13, 1975.

6. Klemas, V., Davis, G., Wang, H., Whelan, W., Tornatore, G., A Cost-Effective Satellite-Aircraft-Drogue Approach for Studying Estuarine Circulation and Shelf Waste Dispersion, Proceedings Ocean 75 Conference, San Diego, 1974.

7. Klemas, V., Davis, G., Wang, H., Whelan, W., Monitoring Estuarine Circulation and Ocean Waste Dispersion Using Integrated Satellite-Aircraft-Drogue Approach, International Conference on Environmental Sensing and Assessment, Los Vegas, September 14-19, 1975.

8. Klemas, V., Remote Sensing of Wetlands Vegetation and Estuarine Water Properties, Proceedings Third International Estuarine Research Conerence, Galveston, October 6-9, 1975. (Invited paper)

9. Eight reports on significant results to NTIS.

10. Klemas, V. and Polis, D. F., Remtoe Sensing of Estuarine Fronts and their Effects on Oil Slicks, University of Delaware Publcation CMS-RANN-4-76, 48 pp., 1976.

11. LANDSAT follow-on investigation interviews conducted at NASA Goddard Space Flight Center, Greenbelt, Md. on October 18, 1976.

12. Review of Basic Research in NASA-related Environmental Quality Monitoring held at NASA Langley Research Center, Hampton, Va. on December 8, 1976.

13. NASA Headquarters Review of task on comparison of training site and spectral signature techniques for classifying coastal land cover, Washington, D. C., March 31, 1977.

14. Bartlett, D. and V. Klemas, Variability of Wetland Reflectance and Its Effect on Automatic Categorization of Satellite Imagery, Proceedings of the American Society of Photogrammetry, 43rd Annual Meeting, Washington, D. C., February 27-March 5, 1977.

15. Klemas, V., Davis, G., Lackie, J., Whalen, W. and Tornatore, G., Satellite, Aircraft and Drogue Studies of Coastal Currents and Pollutants. IEEE Transactions on Geoscience Electronics, Vol. GE-15, No. 2, pp. 97=108, April 1977.

16. Klemas, V. and Polis, D. F., Remote Sensing of Estuarine Fronts and Their Effects on Pollutants, Photogrammetric Engineering and Remote Sensing, Vol. 43, No. 4, May, 1977.

17. Klemas, V., Davis, G. and Henry, R., Satellite and Current Drogue Studies of Ocean-Disposed Waste Drift, Journal of the Water Pollution Control Federation, Vol. 49, No. 5, May, 1977.

E. RECOMMENDATIONS

Find additional funding and continue investigations into 1978-79 time period, using Landsats-2 and -3.

F. FUNDS

On schedule for Objectives 1, 2, 3, and 4. Insufficient for Objectives 5 and 6.

G. DATA USE

All ordered LANDSAT-2 tapes except three have been received so far. They have been evaluated and are currently being analyzed.

H. AIRCRAFT DATA

Aircraft overflights have been on time and on target. Most of the imagery has been received.

I. PERSONNEL CHANGES

None